

Environmental Assessment/
Habitat Conservation Plan
For Issuance of an Endangered Species Act
Section 10(a)(1)(B) Permit for the Incidental Take
of the Golden-cheeked Warbler
(*Dendroica chrysoparia*)
During the Construction and Operation of a
Residential Development on Portions of the
Approximately 78-acre
Greenshores Subdivision
(Russell Eppright Custom Homes)
Travis County, Texas

U.S. FISH AND WILDLIFE SERVICE
10711 Burnet Road, Suite 200
Austin, Texas

July 10, 2003

COVER SHEET

Title for Proposed Action: Issuance of an Endangered Species Act Section 10(a)(1)(B) permit for the incidental take of the endangered golden-cheeked warbler (*Dendroica chrysoparia*) during the construction and operation of residential development on the approximately 78-acre Greenshores Subdivision in Travis County, Texas.

Unit of the US Fish and Wildlife Service Proposing the Action: Regional Director, Region 2, U.S. Fish and Wildlife Service, Albuquerque, New Mexico.

Legal Mandate for Proposed Action: Endangered Species Act of 1973, as amended, Section 10(a)(1)(B), as implemented by 50 CFR 17.22.

Applicants: Russell Eppright Custom Homes

Permit Number: TBD

Duration: 30 years

Funding Plan: Prior to initiating development, the Applicant will offset the impacts of the development of any potentially suitable GCW habitat by dedicating in perpetuity and restricting from any further development activities 55.6 acres of occupied GCW habitat located within the boundaries of the subject site.

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1.0 INTRODUCTION

Russell Eppright Custom Homes has filed an application under section 10(a)(1)(B) of the Endangered Species Act (Act) to allow the incidental take of the federally-listed endangered golden-cheeked warbler (*Dendroica chrysoparia*) (GCW) during the otherwise lawful construction and occupation of the Greenshores Subdivision 78-acre residential development near Lake Austin located at Pearce Road and Oak Shore Drive, Travis County, Texas, northwest of the City of Austin within the City's Extra Territorial Jurisdiction (ETJ) (Figure 1). Suitable habitat for the GCW has been documented on and adjacent to the property. A habitat conservation plan has been included as part of the application. This plan (Section 6.0 of this document) provides for the minimization and mitigation of impacts to the GCW.

In accordance with the Act, as amended, and 50 CFR 17.22, this Environmental Assessment/Habitat Conservation Plan (EA/HCP) has been prepared to address impacts to listed species as a result of the residential development of the Greenshores Subdivision. This EA/HCP describes the impacts to the GCW that would likely result from the development; steps the Applicant would take to minimize and mitigate such impacts; the funding available to implement those steps; and the alternatives that have been considered. Under the Preferred Alternative, the Applicant would provide mitigation measures and seek the issuance of a permit for incidental take of the GCW.

2.0 PURPOSE AND NEED FOR ACTION

The purpose of this EA/HCP is to avoid, minimize and/or mitigate adverse impacts to the GCW and thereby contribute to the species' long-term survival while allowing otherwise lawful development to proceed. The permit application process necessitates an evaluation of the environmental impacts for issuance of a Section 10(a)(1)(B) permit for the Proposed Alternative and the other alternatives that were considered. The permit would authorize the incidental take of the GCW associated with the development of the Greenshores property. This EA/HCP will establish the conditions under which the Applicant would meet the requirements for a section 10(a)(1)(B) permit under the Act.

3.0 DESCRIPTION OF AFFECTED ENVIRONMENT

Most of the property gently slopes downward from the north to the south to Connors Creek which traverses the southwestern portion of the subject site (Figure 2). The relatively gentle slope across the site to the edge of the more dramatic drop off to Connors Creek allows the entire eastern portion of the tract to be conducive to development. The Greenshores Subdivision lies within an area that is being encroached upon by existing and proposed residential and commercial development to the east and south. The high-tech industry has in recent years been evolving and growing in the greater Austin area and attracts many new residents. With these prospective homeowners come new housing developments, infrastructure improvements, and an increased tax base to Austin and Travis County. With increasing demands for housing and employment, the area is attractive for residential and commercial development.

3.1 VEGETATION

Lying within the transition zone of the Edwards Plateau and the Blackland Prairies (Gould, 1975) west of the Balcones Fault, the Greenshores site consists primarily of closed-canopy, dense oak/juniper woodlands with small areas of open woodland adjacent to Pearce Road south of Oak Shore Road and in the north/northwest corner of the tract. Dominant canopy species in the open woodland include plateau live oak (*Quercus fusiformis*) and Ashe juniper (*Juniperus ashei*). Agarita (*Berberis trifoliolata*), Texas persimmon (*Diospyros texana*), and canopy species seedlings are the dominant shrub species. Groundcover is abundant consisting primarily of twisted-leaf yucca (*Yucca rupicola*), prickly pear (*Opuntia sp.*), and Texas wintergrass (*Stipa leucotricha*).

On the majority of the site, canopy coverage exceeds 75 percent and is composed primarily of Texas oak (*Quercus buckleyi*), live oak, Ashe juniper, Texas ash (*Fraxinus texensis*), and escarpment black cherry (*Prunus serotina*). Common shrubs include yaupon (*Ilex vomitoria*), wafer-ash (*Ptelea trifoliata*), and American beauty-berry (*Callicarpa americana*) (Horizon, 2001a)

Rare Plants: Three rare, unlisted species of plants are known to occur in this region: the canyon mock-orange (*Philadelphus ernestii*), Texabama croton (*Croton sp.*), and bracted twistflower (*Streptanthus bracteatus*). During presence/absence surveys in 1998 and 2000, none of these plants were detected on the subject property.

Surveys for the canyon mock-orange were not conducted on the subject property because it typically grows on large boulders or steep rock faces within canyons which do not occur on the subject property. No canyon mock-orange were observed on the subject site.

Texabama croton is known from only a small number of scattered localities, most of which are in the Post Oak Ridge area northwest of the subject property. An isolated population is known 20 miles north of Greenshores. Although natural controls on the distribution of this plant are poorly understood, suitable habitat includes rocky hillsides within deciduous woodlands. No Texabama croton were observed on the subject site.

The bracted twistflower grows on thin clay soils over limestone in or near dense, brushy areas. The preferred habitat for this species near permanent water on ridgetops or upper slopes, does occur on the subject property, but no bracted twistflowers were observed on the subject site. The closest known locations of the bracted twistflower are North Cat Mountain, Cat Mountain, and Mt. Bonnell 2.5 miles to the northeast (Horizon, 2001a; TxBCD, 2002).

3.2 WILDLIFE

Wildlife within the Greenshores Subdivision is typical of oak/juniper woodlands and grasslands in central Texas. Common mammals include armadillo (*Dasypus novemcinctus*), fox squirrel (*Sciurus niger*), white-tailed deer (*Odocoileus virginiana*), Texas mouse (*Peromyscus attwateri*), white-ankled mouse (*Peromyscus pectoralis*), and raccoon (*Procyon lotor*). Common permanent resident bird species include scrub jay (*Aphelocoma coerulescens*), tufted titmouse (*Parus*

bicolor), Carolina chickadee (*Parus carolinensis*), Bewick's wren (*Thryomanes bewickii*), northern cardinal (*Cardinalis cardinalis*), brown-headed cowbird (*Molothrus ater*), and rufous-crowned sparrow (*Aimophila ruficeps*). Common reptiles and amphibians in the area include the Gulf Coast toad (*Bufo valliceps*), cliff frog (*Syrrophus marnocki*), white-throated slimy salamander (*Plethodon albagula*), ground skink (*Scincella lateralis*), and western diamondback rattlesnake (*Crotalus atrox*) (Horizon, 2002a).

Jollyville Plateau Salamander: The Jollyville Plateau salamander (*Eurycea tonkawae*) was formally described as a distinct species in September 2000 (Chippendale *et al.*, 2000). This species is restricted to springs and spring runs in the northern segment of the Edwards Aquifer in northern Travis and southern Williamson counties. Locations where this species occurs generally contain abundant cover, such as rocks and dead leaves, and low to moderately low flow volumes.

No springs or spring runs providing habitat suitable for the Jollyville Plateau salamander occur on the property (Horizon, 2002a).

3.3 LISTED, PROPOSED, AND CANDIDATE SPECIES

Eight federally-listed endangered species occur within the general project region. The black-capped vireo (*Vireo atricapillus*), the GCW, Bone Cave harvestman (*Texella reyesi*), Tooth Cave ground beetle (*Rhadine persephone*), Kretschmarr Cave mold beetle (*Texamaurops redelli*), Tooth Cave pseudoscorpion (*Tartarocreagis texana*), Reddell harvestmen (*Texella reddelli*), and Tooth cave spider (*Neoleptoneta myopica*). Only habitat suitable for the GCW exists on the subject property.

Black-capped Vireo (BCV): The BCV was listed on October 6, 1987. Typical BCV habitat in central Texas consists of shrubby growth of irregular height and distribution reaching to the ground with grassy spaces between clumps. Major shrub species include common shin oak (*Quercus sinuata* var. *breviloba*) or evergreen sumac (*Rhus virens*), with scattered Texas persimmon (*Diospyros texana*), agarita (*Berberis trifoliolata*), Ashe juniper, and plateau live oak. BCVs arrive in Texas from mid-March to mid-April. Adult males often arrive before females and first-year males to select their territories. BCV territories are often clustered in patches of suitable habitat. Although territories range in size, most are 2 to 4 acres. Males sing to attract mates and to defend territories. Singing generally begins to decline by July. Nesting activities generally occur through August and BCVs return to their wintering grounds in western Mexico by mid-September (USFWS, 1991).

In 1998, Horizon Environmental, Inc., conducted a habitat assessment on the proposed Greenshores Subdivision and did not find any habitat suitable for the BCV. The site is covered primarily by closed-canopy oak/juniper woodland, a vegetation community not typically occupied by the BCV (Horizon, 2001a). Accordingly, no adverse effects to BCV would result from development activities, and the species will not be discussed further in the document.

Golden-cheeked Warbler: The GCW was listed by the U.S. Fish and Wildlife Service (Service) under emergency listing procedures in May 1990 and under normal listing procedures in December of that same year. The GCW breeds only in the mixed Ashe juniper-deciduous woodlands of the central Texas Hill Country west and north of the Balcones Fault Line. The species winters primarily in the highland pine/oak woodlands of southern Mexico and northern Central America. The GCW is a habitat specialist that requires the shredding bark of mature (over 10 feet) Ashe junipers for nesting material and forages in Ashe juniper and various deciduous tree species, especially Texas oak. Other common deciduous species used for foraging include plateau live oak, shin oak (*Q. sinuata* var. *breviloba*), cedar elm (*Ulmus crassifolia*), American elm (*U. americana*), Lacey oak (*Q. glaucoides*), blackjack oak (*Q. marilandica*), hackberry (*Celtis laevigata* var. *texana*), Texas ash, post oak (*Q. stellata*), little walnut (*Juglans microcarpa*), Arizona walnut (*J. major*), Mexican persimmon, big-tooth maple (*Acer grandidentatum*), and sycamore (*Platanus occidentalis*). GCWs feed almost entirely on insects and arachnids such as caterpillars, green lacewings, cicadas, katydids, walking sticks, flies, adult moths, small butterflies and spiders. An interior woodland species, GCWs require 50 percent to 100 percent canopy closure: the greater the canopy cover, the better the habitat.

Male GCWs arrive in central Texas in early to mid-March and begin to establish breeding territories that they defend against other males by singing from visible perches within their territories. The females usually arrive a few days later. Eggs are generally incubated in April and fledging usually occurs in May. If their initial nesting attempt fails, birds may not fledge young until early June. By late July, GCWs begin their migration south. The GCW was listed because of imminent and on-going destruction of its habitat, and the greatest threats to the continued existence of GCWs are loss of habitat and urban encroachment. Agricultural activities have eliminated much GCW habitat within the central and northern parts of the warbler's range (USFWS, 1992).

Recent studies (Coldren, 1998; Coldren and Arnold, 1998; Fink, 1996; Kattan *et al.*, 1994; Maas-Burleigh, 1997; Maas and Schnell, submitted) suggest that the rate of habitat loss is accelerating as suburban developments spread into warbler habitat along the Balcones Escarpment, especially in the growth corridor from Austin to San Antonio.

Research indicates that a common factor in the decline of several neotropical migratory passerines is habitat degradation and/or destruction in core breeding areas that are needed to provide a source of immigrants to less productive areas (Robinson, 1992; Donovan *et al.*, 1995a and 1995b). Studies suggest that occupancy and productivity are considerably lower in small patches of habitat than in larger ones (Maas-Burleigh, 1997; Coldren, 1998; Maas and Schnell, manuscript submitted). Like many habitat specialists, GCW populations appear to be less stable in small habitat patches surrounded by urbanization (Engels, 1995; Moses, 1996; Arnold *et al.*, 1996; Bolger *et al.*, 1997; Coldren, 1998). Some studies indicate that the abundance of several bird species, including the warbler, is reduced within 656 to 1640 feet of an urban edge (Engels, 1995; Arnold *et al.*, 1996; Bolger *et al.*, 1997; Coldren, 1998). Coldren (1998) reported that GCW occupancy declined with increasing residential development and roadway width.

Additional information on the status of this species can be found in the GCW Recovery Plan (USFWS, 1992).

Surveys specifically designed to determine the presence of the GCW on Greenshores were conducted in 1998 (Horizon, 2001a). Horizon's survey efforts were conducted on a larger surveyed area that included the site and areas adjacent to the east. Areas now proposed for development as the Greenshores property were included in this effort. The entire site west of Pearce Road is located within the proposed acquisition area of the Balcones Canyonlands Preserve (BCP). Additionally, the BCP has mapped the site as Zone 1 (Confirmed GCW Habitat) and Zone 2 (Unconfirmed GCW Habitat) (Figure 3).

Horizon's surveys of the site identified areas associated with Connors Creek as being utilized by numerous singing male GCWs (Figure 4). Surveys conducted in 1998, 1999 and 2000 by City of Austin biologists along the border with Emma Long Park found GCWs in the Connors Creek drainage and along the fence line with the Greenshores tract in habitat similar to that on the Greenshores site (City of Austin BCP unpublished data).

Karst invertebrates: The subject site is underlain by the Glen Rose Formation (UT-BEG, 1992), which generally does not contain the subsurface caves and voids used by the various karst invertebrate species. These subsurface caves and voids occur primarily within the Edwards Formation (Garner and Young, 1976). According to maps created by George Veni and Associates as part of a study to determine the geologic controls on and distribution of the listed karst invertebrates (1992), all of the Greenshores site is located in a zone "not likely to contain endangered cave species." Surveys of the subject site did not result in any evidence of karst features occurring on the subject site (Horizon, 2001a & b). Accordingly, no adverse effects to karst invertebrates are expected to result from development activities and the species will not be discussed further in the document.

3.4 WETLANDS

The U.S. Army Corps of Engineers (USACE) defines wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE, 1987)."

According to the National Wetland Inventory map, Austin West Quadrangle (USFWS, 1993), only areas associated with the defined drainages of Connors and Hog Pen Creeks are potential jurisdictional areas. Horizon Environmental conducted a wetland determination for the subject site and confirmed that no other areas subject to jurisdiction as "waters of the US" occur on the subject site (Horizon, 2001b).

3.5 GEOLOGIC FEATURES AND SOILS

A review of existing literature shows the site is underlain by the Upper Glen Rose geologic formation. The Upper Member of the Glen Rose Limestone is the relatively impermeable lower confining unit of the Edwards Aquifer. The Upper Glen Rose Limestone is described as

yellowish tan, thinly bedded limestone and marl about 350 to 500 feet thick. The stair-step topography characteristic of the Upper Glen Rose Limestone is caused by the differential erosion of the marl and the harder limestone. The Upper Glen Rose limestone is relatively more thinly bedded, more dolomitic, and less fossiliferous than the Lower Glen Rose limestone. This formation is relatively impermeable with some surface cave development noted (Small *et al.*, 1996).

Soils on the subject site are described as follows (Soil Conservation Service, 1974):

SOIL NAME	SOIL TYPE	SOIL DEPTH (FEET)	UNDERLYING MATERIAL	PERMEABILITY	AVAILABLE WATER CAPACITY	SHRINK-SWELL CAPACITY
Brackett soils, rolling (BID)	gravelly clay loam	4.0	limestone and marl	moderately slow	low	moderate
Tarrant Series	stony clay	1.0	limestone	moderately slow	low	moderate
Travis gravelly soils (TsD)	gravelly fine sandy loam	6.0	light-red gravelly sandy clay loam	slow	high	moderate

3.6 LAND USE

Some small linear portions located within the Greenshores site have been cleared in the past, but the vast majority of the proposed development area remains under dense canopy. The tract has been used for cattle and goat grazing in the past, but is currently vacant and undeveloped. The site is bordered to the north and west by Emma Long Metropolitan Park and to the east and south by residential developments (Horizon, 2001b).

3.7 WATER RESOURCES

The Greenshores Subdivision lies just northwest of the confluence of Connors Creek and the Colorado River. According to the National Wetland Inventory map, Austin West Quadrangle (USFWS, 1993), water bodies or defined channels located on the property include Connors Creek and a small portion of Hog Pen Creek near the northern boundary. On-site water and drinking water is currently supplied by Lake Navigation Water Supply Corporation (WSC), which receives its water supply from on-site wells installed into the northern segment of the Edwards Aquifer (EPA website: <http://oaspub.epa.gov/enviro>). On-site water supply service would be assumed by Greenshores Subdivision WSC upon initiation of development.

3.8 AIR QUALITY

Air quality on the site is currently good. Travis County and the City of Austin are currently full attainment areas for all air quality criteria pollutants of the Environmental Protection Agency (EPA) and Texas Commission on Environmental Quality (TCEQ). Based on data from the nearest monitoring station, ozone levels are currently below the 8-Hour Ozone Standard (http://www.tnrc.state.tx.us/cgi-bin/monops/8hr_monthly).

3.9 WATER QUALITY

All run-off from the subject property would intersect Lake Austin approximately 1,000 feet downstream. The Lake Austin Watershed, in which the subject property is located, currently has an Overall Water Quality Index of: Less Serious Water Quality Problems - Watershed with Lower Vulnerability to Stressors (<http://map2.epa.gov/enviromapper>). No assessment of water quality was made in Connors or Hog Pen Creeks, but because the property is currently vegetated and undeveloped with no erosion or known contaminated sites, the water quality of the runoff is expected to be good.

3.10 CULTURAL RESOURCES

The Texas Historical Commission (THC) web site, *Texas Archeological Sites Atlas*, identifies ten recorded archeological sites within a 1.2-mile (two kilometer) radius of the subject site. Differentiated by type, these sites can be broken down into the following categories: four aboriginal open camps, one aboriginal lithic scatter, and five aboriginal burned rock middens. No sites have been recorded within the boundaries of the subject site. Additionally, no properties currently listed on the National Register of Historical Places (NRHP) or designated as State Archeological Landmarks (SALs) occur on or adjacent to the subject site.

The on-site archeological assessment conducted by Horizon Environmental on June 28, 2002, resulted in the documentation of site 41TV2002, a lithic scatter/raw material cache resting on an exposed bedrock surface. This site, composed of three concentrations of chert and quartzite river cobble, possessed no diagnostic cultural materials or subsurface deposits. It is not considered eligible for inclusion in the NRHP. Additionally, the survey revealed that the surface conditions across the entire property consist of shallow cobbly clay soils, with exposed bedrock over the majority of the surface (Horizon, 2002b) which is not likely to contain significant subsurface artifacts. Due to the lack of significant cultural resources on the property the THC concurred the proposed project would not likely result in any adverse effects (Appendix A).

3.11 SOCIOECONOMIC ENVIRONMENT

The greater Austin area is rapidly and steadily growing. In 1999, the greater Austin metropolitan area grew at an annual rate of 3.5 percent. The current population for the area is 1.25 million people, up from 846,000 in 1990. The population of Travis County increased more than 29 percent since 1990 and the current population is 812,280, consisting of 68.2 percent White, 9.3 percent Black or African American, 4.5 percent Asian, 0.9 percent American Indian or Alaska native persons, and 17.1 percent other (U.S. Census, 2000). The project area lies within a formerly rural portion of Travis County undergoing suburban development, and there are no current residents on the subject property.

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of programs on minority or low-income populations. Development near the property consists of middle to upper middle-class homes. There are no minority or low-income individuals on the property, nor would any minority or low-income individuals be displaced or disadvantaged by this development.

Government, service, trade, manufacturing, finance-real estate, and construction are the primary employment sectors within the metropolitan area according to the Austin Chamber of Commerce. Primary employers are the University of Texas at Austin, Dell Computer Corporation, Motorola Inc., IBM Corporation, and Advanced Micro Devices.

Non-agricultural employment in the greater Austin area during the last decade has grown at an annual rate of approximately 5.3 percent. Unemployment figures have increased recently with the downturn in the high-tech sector in the greater Austin area. Residential real estate trends parallel growth and employment statistics in Travis County.

4.0 ALTERNATIVES, INCLUDING THE PROPOSED ALTERNATIVE

This section presents details of the alternatives considered.

4.1 ALTERNATIVE 1 - PROPOSED ALTERNATIVE

The Proposed Alternative includes the issuance of a permit under Section 10(a)(1)(B) of the Act to authorize incidental take of the GCW during the construction and operation of a residential development, with attendant infrastructure, on the 78-acre Greenshores property (Figure 5). Approximately 21.7 acres would be developed for single family home and associated roads and utilities. The remaining 55.6 acres surrounding Connors Creek and adjacent to Emma Long Park would be preserved and managed in perpetuity for the GCW. The survey results indicate that most GCW activity and nesting was restricted to the areas associated with Connors Creek (Horizon, 2001a). All development was consequently planned for the northern portions of the tract and restricted to areas immediately adjacent to Pearce Road thereby minimizing impacts to the GCW. Construction for the development on Greenshores is likely to require drilling or excavation of the limestone rock in order to install foundations and utilities. Dynamite or other blasting techniques would not be used. Additionally, installation of a surface drip irrigation system would be constructed within an approximate 14.6-acre area located within the proposed preserve areas (Figure 6). The drip irrigation system would be constructed with the aid of minor hand clearing of understory species which would be allowed to return to a natural state following installation activities. The irrigation system would require the clearing of 10-foot wide pathways to contain flexible lengths of tubing that would slowly disperse wastewater effluent. No canopy cover would be removed and the understory clearing would occur outside of the GCW breeding season (Horizon, 2001c).

This proposed development plan includes measures to minimize and mitigate for impacts to the federally-listed endangered GCWs known to occur on the property. The major elements of the HCP for the Proposed Alternative include:

- **Measures to Minimize Impacts to GCW.** Clearing in or within 300 feet of GCW habitat in development areas would not be initiated during the time of year when birds are present (March 1 through August 1). All clearing would be consistent with the current practices recommended by the Texas Forest Service to prevent the spread of oak wilt.

Impacts to GCW habitat resulting from the drip irrigation system, including invasion of exotic species, would be monitored and corrective measures would be taken. Any GCW habitat destroyed as a result of the irrigation system would be restored or replaced.

- **Measures to Mitigate Impacts to GCW.** The Applicant proposes to offset the impacts of the proposed development by preserving, through transfer of fee-simple title or conservation easement to a Managing BCP Partner (Travis County, City of Austin, or LCRA) or other conservation entity approved by the Service, of 55.6 acres of GCW habitat located within the site boundaries along Connors Creek and eight acres off site as approved by the Service.

Operation and maintenance (O&M) obligations, as agreed upon by the managing entity, would be funded by the Applicant and provided by qualified personnel.

4.2 ALTERNATIVE 2 - ALTERNATIVE SITE DESIGN

The Alternative Site Design, which would include the issuance of a permit under Section 10(a)(1)(B) of the Act to authorize incidental take of the GCW during the construction and operation of a residential development with 56 lots and attendant infrastructure on the 78-acre Greenshores property, was examined and rejected. The total areas of direct impact on suitable GCW habitat would total 32.8 acres as opposed to 21.7 acres for the Preferred Alternative (Figure 7). In addition, the total area available for on-site preserve would be 39.7 acres, of which 16.6 acres would have indirect impacts from the increased development density, and the preserve would be reduced to a narrow corridor. Other aspects of Alternative 2 would be the same as for Alternative 1. The Applicant determined that there would be significant adverse impacts to the GCW with the alternate design, it would not allow for sufficient on-site mitigation, and areas in other locations would have to be provided as mitigation. This did not prove to be environmentally or financially feasible for development of the project area.

4.3 ALTERNATIVE 3 - NO ACTION

This alternative assumes that the proposed development does not occur and that an application for incidental take would not be processed. The property would remain in its current condition, and there would be no direct take caused by the authorized construction of a residential development and associated infrastructure. Unless sold to a conservation entity such as the Balcones Canyonlands Preserve, the subject property would have no active management for endangered species and no provision of land or money would be made toward permanent habitat protection for the GCW. Since the property is bordered by existing development to the east, the surrounding area would continue to develop, which could ultimately result in degradation of the GCW habitat on-site. This alternative would provide no economic value for the current landowner, who would continue to incur property tax liabilities.

Since the property is located within the proposed acquisition boundaries of the Balcones Canyonlands Preserve, the property could be purchased by Travis County or the City of Austin. If acquired, the property would be actively managed for the preservation of the GCW. Funding for purchase of preserve lands is limited and available funds have been applied to higher priority

parcels. To date, no offer to purchase the Property has been made to the Applicant, and it is unknown when such an offer could be made. No other economically feasible alternative is known that would avoid impacts to the GCW. Therefore, this alternative was rejected.

5.0 ENVIRONMENTAL CONSEQUENCES

5.1 PROPOSED ALTERNATIVE

5.1.1 On-site Impacts

5.1.1.1 Vegetation

Ashe juniper/deciduous woodland would be removed from approximately 21.7 acres of the subject property as needed for the construction of structures, impervious surfaces (e.g. driveways, walkways, streets), and landscaping. The majority of the dense canopy cover (primarily immature Ashe juniper and interspersed varieties of oaks) would be removed in the development areas with the exception of some mature trees which would be left for landscaping. Existing native vegetation would be maintained where possible and encouraged within the development areas. The drip irrigation system would add additional moisture, nutrients (especially nitrogen and phosphorus), and salts that may alter the existing natural vegetation assemblage on 14.6 acres of closed canopy oak/juniper woodland. Enhanced growth of vegetation would be expected and possibly a shift in the local community composition, including the possible invasion of exotic species. Any effects would be dependent on the content and water quality of the effluent, the nature of the soils, and evapo-transpiration rates. The effluent would be treated wastewater that meets TCEQ standards. It is unknown whether the possible impacts of the irrigation system would be significant.

5.1.1.2 Wildlife

Existing wildlife within those areas planned for development would largely be displaced during the construction process. Existing habitat would be destroyed and some inter- and intra-specific competition in adjacent habitat that results in mortality or lowered fecundity could occur resulting in the decline of some rural species. Following construction, landscape vegetation and preserved trees could provide habitat for those species tolerant of suburban development, such as blue jays (*Cyanocitta cristata*), brown-headed cowbirds, house sparrows (*Passer domesticus*) and European starlings (*Sturnus vulgaris*). It is expected that red imported fire ants (*Solenopsis invicta*), cockroaches, and other urban-tolerant species, including white-tailed deer, would increase and native species, such as most birds, snakes, and other herpetofauna would decrease.

5.1.1.3 Listed, Proposed, and Candidate Species

Approximately 21.7 acres of GCW habitat would be directly modified by the proposed development. In addition, approximately 25.9 acres of suitable habitat both on-site and off-site would be impacted from indirect effects of development, such as increased numbers of competitive, predatory or parasitic urban birds, increased noise levels, predation by free-roaming pets, invasion of exotic species and human intrusion. The direct and indirect effects would eliminate or render the habitat less suitable for GCWs following completion of the proposed development. Resident GCWs would likely be unable to find suitable nesting sites or displace other GCWs in remaining habitat nearby resulting in the loss of reproductive potential.

Assessment of Take

Approximately 21.7 acres of golden-cheeked warbler habitat would be directly modified under this alternative. In addition, the suitability of another approximately 25.8 acres of warbler habitat may be reduced as a result of indirect effects associated with development. Therefore, a total of approximately 47.6 acres of GCW habitat may be adversely affected by Alternative 1. This is expected to adversely impact up to three GCW territories. No take authorization for any other species is being requested or would be granted by issuance of this permit.

As part of the proposed action, an HCP has been proposed to minimize and mitigate for the adverse impacts to the listed GCW and its habitat and to assure that this action does not reduce the potential for survival and recovery of the GCW as mandated by requirements of 50 CFR Part 17.22(b)(1)(iii). The HCP is detailed in Section 6.0.

5.1.1.4 Wetlands

Areas subject to jurisdiction under Section 404 of the Clean Water Act do exist on the subject property. These areas include the defined drainage areas associated with Connors and Hog Pen Creeks. No development is proposed within these areas. Therefore, there would be no impacts to wetlands or other waters of the U.S. as a result of this alternative.

5.1.1.5 Geologic Features and Soils

Since the soil is very thin and rocky, surface soil alterations in the development zone, such as grading, would be minimal and would comply with all applicable construction codes for erosion and sedimentation control during the construction process. However, construction would likely require drilling or excavation of the limestone rock in order to install foundations and utilities.

5.1.1.6 Land Use

Approximately 21.7 acres would be converted from open space/ranch land to residential and commercial development for the Proposed Alternative. Residential lots of approximately 0.5-0.75 acres are proposed for the site. The proposed alternative is fully comparable and compatible with current land uses in the area.

5.1.1.7 Water Resources

The project would increase the water withdrawal from the northern segment of the Edwards Aquifer. On-site water and drinking water would be supplied by a newly formed water supply corporation serving the proposed Greenshores Subdivision. Subsurface groundwater resources would be altered by construction of impervious cover within the development area. Some rainwater that would have seeped into geologic strata would become surface run-off.

5.1.1.8 Air Quality

Development of the subject property would contribute to local traffic noise and exhaust emissions by increasing the number of people operating vehicles in the area. A reduction in the number of trees on the property may slightly reduce local air filtering capabilities, although this reduction may be offset by future landscaping. A temporary increase in noise and dust levels would be expected during the construction process.

5.1.1.9 Water Quality

Although all development codes, current or future, would be complied with during all aspects of development, some water quality degradation might occur from potential pesticide and fertilizer use on the property.

5.1.1.10 Cultural Resources

The cultural artifacts found on the site have been reported to the THC and have not been determined to be of major importance by THC (Appendix A). Therefore, no significant cultural resource deposits would be adversely affected by the proposed development and no further actions would be required with respect to potential cultural resources.

5.1.1.11 Socioeconomic Environment

The proposed development, construction, and occupation of the Greenshores Residential Subdivision would include construction of 37 residential lots, with attendant infrastructure on the northern portions of the 78-acre property and along the western edge of Pearce Road. This would result in an increase in population and property values within the area. Since the property is currently unoccupied, there would be no impacts to minority or economically disadvantaged communities.

5.1.2 Off-site Impacts

5.1.2.1 Vegetation

Since no off-site construction activities would be required for completion of the Proposed Alternative, no off-site impacts to vegetation are expected as a result of the Proposed Alternative.

5.1.2.2 Wildlife

An unquantifiable effect from the displacement of wildlife to adjacent areas would be anticipated through increased competition, exposure to predation, an increase in species, both native and non-native, that benefit from urbanization (fire ants, grackles (*Quiscalus quiscula*), house sparrows, starlings), and other impacts, including increased mortality of wildlife due to vehicular strikes off-site.

5.1.2.3 Listed, Proposed, and Candidate Species

Some negative off-site impacts would occur to GCWs that inhabit land adjacent to the proposed development for the Proposed Alternative. Approximately 8.0 acres of potentially suitable GCW habitat adjacent to the proposed development, mostly along the northern boundary, would be subject to indirect effects of development such as human disturbance, increased predation by blue jays, grackles, and cowbirds and changes in habitat as a result of edge effects.

5.1.2.4 Wetlands

According to the National Wetlands Inventory map, Austin West quad (USFWS,1993), no known wetlands are within 0.5 miles of the proposed development. However, areas associated with Connors Creek would be receiving runoff from the subject site. To minimize impacts to these areas, the Applicant would implement erosion control measures as necessary to prevent soil erosion and run-off from the property.

5.1.2.5 Geologic Features and Soils

Since no soils or rock would be removed, no off-site impacts to geologic formations or soils would occur as a result of the proposed alternative. Any off-site construction would comply with applicable construction codes for erosion and sedimentation control.

5.1.2.6 Land Use

This project would contribute to an increased demand for local schools, commercial stores, gas stations, government services, utilities, and other urban development. The proposed alternative would be fully comparable to current and proposed land use in the area.

5.1.2.7 Water Resources

Off-site surface resources would not be impacted by this activity. The probable impacts on the northern segment of the Edwards Aquifer are unknown, but, considering the small size of the development the impacts should be insignificant. Natural water volumes exiting from the site would remain consistent with normal weather patterns, with a slight increase in surface water run-off due to an increase in impervious cover.

5.1.2.8 Air Quality

Vehicle emissions and noise levels, as well as emissions from fireplaces, would increase locally due to an increase in the number of vehicles and residences in the area.

5.1.2.9 Water Quality

Water quality could be degraded within Connors and Hog Pen Creeks due to run-off from increased impervious cover and suburban landscaping on the subject site. However, with the encouragement of xeriscaping in the HCP, the negative impacts might be minimized.

5.1.2.10 Cultural Resources

Since no construction is proposed outside of this development and no significant cultural resources are located nearby, no off-site impacts would be expected.

5.1.2.11 Socioeconomic Environment

The Proposed Alternative would result in an increase in the overall population and jobs in the area, resulting in increased traffic and demand for government service, roads, schools, stores and services. The proposed subdivision can be described as a “Mid-Level,” affordable subdivision and would not adversely impact any minority or economically disadvantaged communities.

5.1.3 Cumulative Impacts

This section considers past, present, and future projects (authorized or under review) that are considered to contribute to the cumulative impacts on not only the endangered/threatened and other rare species, but also on society and the human environment in the greater Austin area.

5.1.3.1 Vegetation

Because the Proposed Alternative would result in disturbance of 21.7 acres of oak/Ashe juniper woodlands, it would cumulatively contribute to the loss of these vegetation types in Travis County. The adjacent areas to the east and south are, or are likely to be, developed as residential development, but the majority of the immediate area west and north is occupied by Emma Long Park, which is not expected to be developed.

5.1.3.2 Wildlife

The Proposed Alternative would contribute to a cumulative reduction of habitat for some wildlife species intolerant of human impacts when added to impacts resulting from other development, road construction, and other types of land use projects in Travis County. Wildlife species associated with urban and suburban settings would likely increase, while species intolerant of development would locally decrease.

The development on the Greenshores Residential Subdivision would contribute to cumulative negative impacts from development in the area to the quality of water that emerges into Connors and Hog Pen Creeks. This degradation in water quality could contribute to a negative effect on the species that use these streams. However, the headwaters of these streams are in Emma Long Park and significant additional development upstream is not anticipated.

5.1.3.3 Listed, Proposed, and Candidate Species

The Proposed Alternative would reduce the amount of suitable GCW habitat in the area. This would contribute to the overall take of the GCW and its habitat in Recovery Region 5 when added to other section 10(a)(1)(B) incidental take permits and Biological Opinions that have been or would be issued by the Service. To date, 116 incidental take permits and eight Biological Opinions for the GCW have been issued in the Travis/Williamson/Hays Counties area. These permits cover about 20,006 acres, approximately 25 percent of which was GCW habitat. Most of the permitted area is included within the 633,000-acre area in Travis County covered by the Balcones Canyonlands Preserve regional 10(a)(1)(B) permit.

There are currently approximately three active incidental take permit applications for take of GCWs being considered by the Service in the Austin area. These applications or pre-application consultations cover in excess of 382 acres, a portion of which is suitable GCW habitat. Every incidental take permit is required to provide mitigation of impacts to the maximum extent practicable. The 47.5 acres of GCW habitat expected to be impacted by the Proposed Alternative, added to approximately 75,963 acres already permitted in Williamson, Travis, and Hays Counties constitute approximately 32 percent of the estimated 240,747 acres of GCW habitat in Recovery Region 5 and less than 10 percent of the GCW habitat range wide (derived from USFWS 1992).

The level of impacts resulting from projects for which permits are currently being considered is dependent on the amount of take resulting from the actual number of these permits issued by the Service. Cumulatively, the anticipated take from future permits could have the potential to reduce the probability of survival and recovery of the GCW over time, and thus each application, including this one, is being evaluated with respect to its impact on the populations of GCWs in Recovery Unit 5. The recovery strategy for the GCW calls for the preservation of sufficient breeding habitat to ensure the continued existence of at least one self-sustaining, viable population of GCWs in each of eight recovery regions (USFWS, 1992). Currently, 26,358 acres of GCW habitat have been preserved in the BCP with a goal of acquiring a total of 30,428 acres. Those acres, plus the 45,000 acres to be included in the still incomplete Balcones Canyonlands National Wildlife Refuge, are considered adequate to sustain a viable population of GCWs (RECON, 1996). Prime, currently utilized habitat on the property is being included in the BCP and protected in perpetuity.

5.1.3.4 Wetlands

Since there are no expected impacts to wetlands as a result of the proposed development, the Proposed Alternative would not add to cumulative impacts to wetlands in the area.

5.1.3.5 Geologic Features and Soils

Since the impacts to geologic features and soils would be minor surface impacts similar to other development activities in the area, cumulative impacts to geologic features and soils would be minor.

5.1.3.6 Land Use

The Proposed Alternative would contribute to the on-going conversion of undeveloped land to developed land in the Travis County area.

5.1.3.7 Water Resources

Together with other development occurring in the area, the Proposed Alternative would add to the overall demand for water resources.

5.1.3.8 Air Quality

The Proposed Alternative would contribute to degradation of air quality in the Austin area through an increase in automobile emissions. The degree of the impact would depend upon air quality requirements for construction activities and automobiles. None of these impacts would have a great effect on local or regional air quality.

5.1.3.9 Water Quality

The proposed development would contribute to the degradation of water quality in Connors and Hog Pen Creeks. However, the reaches of the streams are relatively short and their headwaters and the majority of drainage areas are located on the naturally vegetated Emma Long Park, so the negative impacts on the creeks should be small. Any deterioration of water quality as a result of the development would add to that of the residential area and proposed development down stream. Both creeks feed into Lake Austin (Colorado River) and could contribute along with other developments along the river to degradation of water quality there.

5.1.3.10 Cultural Resources

The cultural resources report prepared as part of the proposed project would add to the knowledge about the pre-historic peoples that lived in the area prior to European settlement. Since no significant deposits were found, the Proposed Alternative would not add to negative cumulative impacts to cultural resources in the area.

5.1.3.11 Socioeconomic Environment

The Proposed Alternative would contribute to the increase in population, property values, and traffic in Travis County, which would, over time, become more urbanized with each new development. No cumulative impacts to minorities or the economically disadvantaged would be expected.

5.2 ALTERNATIVE 2 - ALTERNATE SITE DESIGN

5.2.1 On-site Impacts

5.2.1.1 Vegetation

Development into 56 home sites would occur over 32.8 acres of the property (Figure 7). Natural vegetation would be removed from each lot, and it would be left to each particular landowner to landscape as they pleased.

5.2.1.2 Wildlife

Impacts would be greater in comparison to the Proposed Alternative. Less habitat would be available for those species tolerant of suburban residential areas than in the Proposed Alternative.

5.2.1.3 Listed, Proposed, and Candidate Species

Impacts would be greater in comparison to the Proposed Alternative. More suitable GCW habitat would be impacted, and development would encroach even more upon the currently occupied habitat. Resident GCWs would likely be unable to find suitable nesting sites or would displace other GCWs in remaining habitat nearby, resulting in increased competition and the loss of reproductive potential.

Assessment of Take

Approximately 32.8 acres of golden-cheeked warbler habitat would be directly modified under this alternative. In addition, the suitability of another approximately 35.2 acres of warbler habitat would be reduced as a result of indirect effects associated with development. Therefore, a total of approximately 68.0 acres of GCW habitat would be adversely affected by Alternative 2. This would adversely impact up to four GCW territories. No take authorization for any other species would be granted by issuance of this permit.

As part of the proposed action, an HCP would be implemented to minimize and mitigate for the adverse impacts to the listed GCW and its habitat and to assure that this action does not reduce the potential for survival and recovery of the GCW as mandated by requirements of 50 CFR Part 17.22(b)(1)(iii). The HCP would be similar to the HCP proposed for Alternative 1 in Section 6.0 except that a lesser amount (41.7 acres) of on-site habitat would be preserved and no off-site mitigation would be provided.

5.2.1.4 Wetlands

Impacts would be the same as for the Proposed Alternative.

5.2.1.5 Geologic Features and Soils

Impacts would be the same as for the Proposed Alternative only greater in extent.

5.2.1.6 Land Use

Impacts would be the same as for the Proposed Alternative.

5.2.1.7 Water Resources

Impacts would be similar to those of the Proposed Alternative, but the increase in water use would be greater. There would be a larger amount of impervious cover, so less rainwater would infiltrate into the local aquifer.

5.2.1.8 Air Quality

Impacts would be similar to those of the Proposed Alternative, except that air quality would further decrease because more automobiles would be operated in the area.

5.2.1.9 Water Quality

Impacts would be similar to those of the Proposed Alternative, but the decrease in water quality would be greater because of the increased impervious cover expected.

5.2.1.10 Cultural Resources

Impacts would be the same as for the Proposed Alternative.

5.2.1.11 Socioeconomic Environment

Impacts would be similar to the Proposed Alternative but to a greater extent because more homes would be constructed.

5.2.2 Off-site Impacts

No off-site construction activities would be required for completion of Alternative 2.

5.2.2.1 Vegetation

No off-site impacts to vegetation would be expected as a result of Alternative 2.

5.2.2.2 Wildlife

Impacts would be the same as for the Proposed Alternative.

5.2.2.3 Listed, Proposed, and Candidate Species

Approximately 10.5 acres of GCW habitat would be negatively affected off-site by Alternative 2.

5.2.2.4 Wetlands

Impacts would be the same as for the Proposed Alternative.

5.2.2.5 Geologic Features and Soils

No off-site impacts to geologic features or soils are expected as a result of completion of activities associated with Alternative 2.

5.2.2.6 Land Use

Impacts would be the same as for the Proposed Alternative.

5.2.2.7 Water Resources

Impacts would be the same as for the Proposed Alternative, only greater in extent.

5.2.2.8 Air Quality

Impacts would be the same as for the Proposed Alternative, only greater in extent.

5.2.2.9 Water Quality

Impacts would be the same as for the Proposed Alternative, only greater in extent.

5.2.2.10 Cultural Resources

Since no construction is proposed outside of this development, no off-site impacts are expected.

5.2.2.11 Socioeconomic Environment

Impacts would be the same as for the Proposed Alternative only greater in extent.

5.2.3 Cumulative Impacts

This section considers the past, present, and future projects (authorized or under review) that are considered to contribute to the cumulative impacts on not only the endangered/threatened and other rare species, but also on society and the human environment in the greater Austin area.

5.2.3.1 Vegetation

Impacts would be similar to the Proposed Alternative, only greater in extent.

5.2.3.2 Wildlife

Impacts would be similar to the Proposed Alternative, only greater in extent.

5.2.3.3 Listed, Proposed, and Candidate Species

Cumulative impacts would be similar to the Proposed Alternative, only greater in extent. The 67.9 acres of GCW habitat expected to be impacted by Alternative 2, added to approximately 75,963 acres already permitted in Williamson, Travis, and Hays Counties constitute approximately 32 percent of the estimated 240,747 acres of GCW habitat in Recovery Region 5 and less than 10 percent of the GCW habitat range wide (derived from USFWS, 1992).

5.2.3.4 Wetlands

Cumulative impacts would be the same as for the Proposed Alternative.

5.2.3.5 Geologic Features and Soils

Cumulative impacts would be the same as for the Proposed Alternative.

5.2.3.6 Land Use

Cumulative impacts would be the same as for the Proposed Alternative.

5.2.3.7 Water Resources

Cumulative impacts would be the same as for the Proposed Alternative, only greater in extent.

5.2.3.8 Air Quality

Cumulative impacts would be the same as for the Proposed Alternative, only greater in extent.

5.2.3.9 Water Quality

Cumulative impacts would be the same as for the Proposed Alternative, only greater in extent.

5.2.3.10 Cultural Resources

Cumulative impacts would be the same as for the Proposed Alternative.

5.2.3.11 Socioeconomic Environment

Impacts would be the same as for the Proposed Alternative only greater in extent.

5.3 ALTERNATIVE 3 - NO ACTION

5.3.1 On-site Impacts

5.3.1.1 Vegetation

If no incidental take permit is issued for development of the property, the current vegetation would not be removed. However, with the increase of surrounding urbanization, changes in the oak/juniper woodland are likely to occur such as invasion of exotic species, oak wilt, and a tendency toward a pure-stand of juniper as a result of over-browsing by deer, all of which could degrade the habitat for the GCW.

5.3.1.2 Wildlife

There would be no impact to wildlife as a result of the No Action Alternative, but there would be no management of the tract, which could be vulnerable to unauthorized trespass and dumping unless the tract was acquired as preserve land.

5.3.1.3 Listed, Proposed, and Candidate Species

The GCWs currently utilizing the area would not be immediately effected, but the tract would not be managed for the benefit of the warbler unless the tract was acquired as preserve land.

5.3.1.4 Wetlands

There would be no impacts to wetlands.

5.3.1.5 Geologic Features and Soils

There would be no impacts to geologic features or soils.

5.3.1.6 Land Use

There would be no change in land use, although as the area becomes more urban, vandalism and unauthorized use would likely increase.

5.3.1.7 Water Resources

There would be no increase in water use on this property and no impacts to water resources.

5.3.1.8 Air Quality

There would be no change in air quality.

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5.3.1.9 Water Quality

There would be no change in water quality in Connors or Hog Pen Creek.

5.3.1.10 Cultural Resources

There would be no impacts to cultural resources.

5.3.1.11 Socioeconomic Environment

There would be no impacts to the socioeconomic environment.

5.3.2 Off-site Impacts

There would be no off-site impacts.

5.3.3 Cumulative Impacts

There would be no cumulative impacts.

6.0 PROPOSED HABITAT CONSERVATION PLAN

This section contains the specific conservation plan for the Proposed Alternative. This HCP is provided to avoid, minimize, and mitigate any impacts to the endangered GCW on the Greenshores Residential property. As mandated by requirements of 50 CFR Part 17.22(b)(1)(iii), the HCP is intended to ensure that the proposed development does not reduce the potential for survival and recovery of the GCW. This HCP does not include any provisions for other listed or non-listed species.

A. Biological Goals and Objectives

The goals of this HCP are:

1. To maintain 55.6 acres as occupied, productive GCW habitat after development of the subdivision.
2. To buffer the GCW habitat on adjacent Emma Long Park from the impacts of the adjacent development.

B. Mitigation

On-Site Mitigation

1. Prior to initiating development, the Permittee shall set aside, and assure long term management of, 55.6 acres of GCW habitat on-site located within the site boundaries along Connors Creek (Figure 5) by transfer of simple title or conservation easement to a BCP Managing Partner (Travis County, City of Austin, or LCRA), or other conservation entity approved by the Service.
2. Operation and maintenance (O&M) obligations shall be funded by the Permittee by payment of an amount to a BCP Managing Partner, or other entity approved by the Service, sufficient to fund management to a level equivalent to that required by the BCP.
3. O&M shall include annual monitoring of the Preserve area including GCW presence/absence surveys, deer and browse surveys and other measures consistent and necessary for the management of the BCP. Measures to control the deer population shall be applied as necessary.
4. O&M shall include the monitoring and control of noxious and invasive species within the areas where the drip irrigation system will be installed. Coordination will be conducted with Service personnel as to the proper control method should invasive species become apparent in the area.

5. Motorized vehicles, mountain bikes, horseback riding, livestock, cats, dogs, dumping of material (including pool water), pesticides, herbicides, fertilizers, clearing of vegetation, construction or anything else that is not consistent with the management of habitat for the GCW shall be prohibited within the Preserve Area.
6. The Permittee shall ensure that unauthorized access to the Preserve area is prevented by fencing the boundary between the development area, including any road frontage, and the Preserve. The fence must be constructed to a standard to adequately prohibit unauthorized access.

Off-Site Mitigation

7. An additional eight (8) acres of GCW habitat is necessary in order to adequately mitigate impacts to GCWs as a result of the development of the Greenshores project. These additional 8 acres will be provided by participation in the BCP at a cost of \$ 4,000.00 per acre or additional on-site mitigation through expansion of the proposed preserve area if the Permittee is successful in acquiring the tract of land adjacent to the proposed preserve area. The intent is to offset the impacts to the GCW. All mitigation will be in place and approved by the Service prior to initiation of any clearing activities.

Development Area

8. Wherever feasible, the developer shall use native plants and utilize xeriscape principles for landscaping purposes. Xeriscaping is the use of plants in landscaping that require little or no supplemental watering other than natural rainfall. Native plants are those that naturally occur in the immediate area and are by nature suitable for xeriscaping. Native plants require no pesticides, herbicides, or fertilizer, and help discourage fire ants.
9. The Permittee shall encourage lot owners to utilize xeriscape principles using native plants through the distribution of educational material in the form of a pamphlet that will be developed in conjunction with the Service.
10. The Permittee shall prohibit the use of deer feeders and bird seed feeders (except for hummingbird, thistle and suet feeders) in residential yards by placing deed restrictions on the lots prior to sale.
11. Restrictive covenants enforcing terms and conditions in the HCP shall be recorded and provided to the Service prior to the sale of the first lot. All prospective homeowners/landowners and all construction crews shall be notified of the restrictive covenants and the purpose of and prohibitions on activities within the Preserve.
12. In order to implement the conditions (5, 8, 9, 10), prior to the sale of any lots within the Property, the Permittee shall prepare and submit appropriate education materials to the Service for its prompt review and approval, and the Permittee shall then deliver these materials to lot purchasers.

13. The use of herbicides and pesticides by the Permittee shall comply with all label guidelines for application.
14. The Permittee shall minimize clearing for construction of impervious cover to the greatest extent practicable. Areas, which are disturbed during construction but are not occupied by impervious surfaces, shall be replanted with native oaks and other vegetation native to Travis County.
15. The use of construction equipment will be limited to the development area as delineated on Figure 5 of the EA/HCP. Contractors are to avoid the Preserve Area. If any vegetation is unintentionally disturbed within the Preserve Area, the Permittee will ensure that area is immediately replanted with similar native vegetation.

Construction Practices

16. Clearing of vegetation in or within 300 feet of GCW habitat shall be done only during August 1 through March 1 of each year, unless a breeding season survey performed by a Service-permitted biologist indicates that no warblers are present within 300 feet of the desired activity. GCW surveys will not be required, but will be at the applicant's election in the event there is a need to clear between March 1 and August 1. Construction activities in or within 300 feet of warbler habitat may be initiated and continued during the time of year when warblers are present, so long as such construction is initiated prior to March 1 or follows permitted clearing in a prompt and expeditious manner indicating a continuous activity.
17. Clearing shall be consistent with the current practices recommended by the Texas Forest Service to prevent the spread of oak wilt during clearing for construction within the proposed development areas.
18. Erosion and siltation management during road and utility construction shall meet, at minimum, the Texas Natural Resources Conservation Commission (TNRCC) code requirements and protocols for storage, use, and spill containment and countermeasures for construction-related chemical and petroleum products. The construction will comply with Environmental Protection Agency (EPA) stormwater – best management practices.

Monitoring and Reporting

19. Monitoring of the mitigation area and annual reporting will be the responsibility of the managing entity unless that organization fails to conduct the monitoring required by the HCP. In that case, the Permittee shall be responsible for this activity.
20. The Permittee shall provide an annual report to the Service on October 1 of each year during the term of the permit or until 95 percent build out, whichever occurs first on all activities within the development, including construction progress and implementation of mitigation measures.

Funding

21. Funding for the operations, management, and monitoring of the on-site mitigation lands shall be provided prior to the initiation of clearing of any potentially suitable GCW habitat. The amount of the funding adequate to manage the preserve land in perpetuity shall be established in consultation with the management provider prior to permit issuance.

C. Limitation on Imposition of Additional Conservation Measures

1. Changed Circumstances, Notice of Same and Implementation of Response

(a) **Changed Circumstances**

The following are Changed Circumstances, and corresponding conservation and mitigation measures, if any, that the Permittee shall implement in response to such Changed Circumstances, should they occur during the life of the Permit:

- 1) The effluent irrigation in the Preserve area results in the invasion of exotic species and degradation of GCW habitat.

If this occurs the Applicant will modify or repair the existing system to ensure that it functions without resulting in the degradation of suitable habitat. In the event that it is determined that adverse impacts to suitable habitat are unavoidable, the permittee shall provide additional mitigation to the Service to compensate for the amount of habitat determined to be adversely effected by the discharge of effluent.

- 2) The GCW no longer occupies the Preserve area.

No further mitigation is feasible if this occurs.

As long as the terms of the HCP are being properly implemented, the Service shall not require the implementation of any conservation and mitigation measures by the Permittee in response to Changed Circumstances, other than those measures specified in this Subparagraph C.1.(a).

(b) **Notice of Changed Circumstances and Implementation of Response**

- 1) Permittee-initiated response to Changed Circumstances.

The Permittee shall give written notice to the Service within 30 days after learning that any of the Changed Circumstances listed in the HCP and Subparagraph C.1.(a) has occurred. As soon as practicable thereafter, but no later than 90 days after learning of the Changed Circumstances, the Permittee shall modify its activities in the manner and to the extent

required by the HCP and Subparagraph C.1.(a) hereof and report to the Service on its actions. The Permittee shall make any such required modifications without awaiting notice from the Service.

2) **Service-initiated Response to Changed Circumstances.**

If the Service determines that Changed Circumstances have occurred and that the Permittee has not responded in accordance with the HCP and Subparagraph C.1.(a), the Service shall so notify the Permittee in writing and direct the Permittee to make the required changes. Within 90 days after receiving such notice, the Permittee shall make the required changes and report to the Service on its actions.

(c) **Effect of Changed Circumstances on Permit and HCP**

Changed Circumstances are provided for in the HCP and, hence, do not constitute Unforeseen Circumstances or require amendment of this Permit or the HCP. Changed Circumstances do not constitute “new information” under 50 C.F.R. § 402.16(b), and, hence, the occurrence of Changed Circumstances does not require the reinitiation of formal consultation by FWS under Section 7 of the ESA on its action of issuing the Permit.

2. **Unforeseen Circumstances**

(a) **No Surprises Assurances**

The GCW is considered adequately addressed under the Greenshores HCP and is, therefore, covered by the “no surprises” rule assurances. In the event that it is demonstrated by the Service that Unforeseen Circumstances exist during the life of the Permit and additional conservation and mitigation measures are deemed necessary to respond to Unforeseen Circumstances, the Service may require additional measures of the Permittee where the HCP is being properly implemented, but only if such measures are limited to modifications within the Preserve conserved pursuant to the terms of the HCP or to the HCP’s operating conservation program for the GCW, and maintain the original terms of the HCP to the maximum extent possible. Notwithstanding the foregoing, the Service shall not:

- i) Require the commitment of additional land, water or financial compensation by the Permittee without the consent of the Permittee; or
- ii) Impose additional restrictions on the use of land, water or natural resources otherwise available for use by the Permittee under the original terms of the HCP, including additional restrictions on the permitted activity.

(b) **Effect of Unforeseen Circumstances on Permit**

Except as provided in Subparagraph C.2. hereof, notwithstanding the

occurrence of Unforeseen Circumstances, as long as the Permittee continues to properly implement the provisions of the HCP and any additional measures required by the Service in accordance with Subparagraph C.2.(a) hereof, the Permit will remain in full force and effect

(c) Notice of Unforeseen Circumstances

The Service shall notify the Permittee in writing of any Unforeseen Circumstances of which the Service becomes aware that may affect the obligations of the Permittee under the Permit or the HCP.

In addition, the Service would include the following conditions in any issued permit:

1. Written annual reports of the year's activities will be submitted by October 1 of each year to the U.S. Fish and Wildlife Service, 10711 Burnet Road, Suite 200, Austin, Texas 78758; and to the U.S. Fish and Wildlife Service, P.O. Box 1306, Room 4102, Albuquerque, New Mexico 87103.
2. Upon locating a dead, injured, or sick GCW, or any other endangered or threatened species, the Permittee is required to contact the Service's Law Enforcement Office, Austin, Texas, (512) 490-0948, or in San Antonio, Texas, (210) 681-8419, for care and disposition instructions. Extreme care should be taken in handling sick or injured individuals to ensure effective and proper treatment. Care should also be taken in handling dead specimens to preserve biological materials in the best possible state for analysis of cause of death. In conjunction with the care of sick or injured endangered/threatened species, or preservation of biological materials from a dead specimen, the Permittee and its contractor/subcontractor have the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.
3. The deed restrictions, permit, and appropriate attachments such as this EA/HCP shall be recorded with the County Clerk, Travis County, Texas, prior to the beginning of development related activities on the Greenshores property. A recorded copy of this action will be returned to the Service within 30 days.
4. Conditions of this permit shall be binding on, and for the benefit of, the Permittee and its respective successors and assigns. If the permit requires an amendment because of change of ownership, the Service will process that amendment without the requirement of the Applicant preparing any new documents or providing any mitigation over and above that required in the original permit. The construction activities proposed or in progress under an original permit may not be interrupted, provided the required special conditions of an issued permit are being followed.
5. If, during the tenure of this permit, the project design and/or the extent of the habitat impact described in the habitat conservation plan is altered, such that there may be an increase in the anticipated take of the GCW, the Permittee is required

to contact the Service and obtain authorization and/or amendment of the permit before commencing any construction or other activities that might result in take beyond that described in the EA/HCP.

6. The mitigation for this permit with the approval of the Service may fully support and accrue full benefits to the Balcones Canyonlands Preserve, Permit PRT-788841.
7. The authorization granted by the permit is subject to full and complete compliance with, and implementation of, the EA/HCP for the Applicant and the Service; and all specific conditions contained in this permit. These permit terms and conditions shall supersede and take precedence over any inconsistent provisions in the EA/HCP, or other permit documents.
8. Acceptance of the permit serves as evidence that the applicants understand and agree to abide by the terms of the permit and all applicable Sections of Title 50 Code of Federal Regulations Parts 13, and 17 pertinent to issued permits.

7.0 AMENDMENTS

It is necessary to establish a procedure whereby the Section 10(a)(1)(B) permit can be amended. However, it is important that the cumulative effect of amendments will not jeopardize any threatened, endangered, or other rare species. Amendments must be evaluated based on their effect on the habitat as a whole. The Service must be consulted on all proposed amendments. The types of proposed amendments and the applicable amendment procedures are as follows:

7.1 AMENDMENTS TO LOCALLY APPROVED DEVELOPMENT PLANS

It is acknowledged that upon the written request of the Applicant, the local agency having land use regulatory jurisdiction is authorized, in accordance with applicable law, to approve amendments to development plans for the subject development area that do not encroach upon any endangered species habitat that is not presently contemplated to be taken as a consequence of the development and that do not alter the conditions set forth in the HCP.

7.2 MINOR AMENDMENTS TO THE HCP

Minor amendments involve routine administrative revisions, changes to the operation and management program, or minor changes to the development envelope and changes in land use in the development area that do not diminish the level or means of mitigation or increase the impacts to the species or their habitats. Such minor amendments do not materially alter the terms of the Section 10(a)(1)(B) Permit.

Upon the written request of the Applicant, the Service is authorized to approve minor amendments to the HCP if the amendment does not conflict with the primary purposes of this EA/HCP as stated in Section 2.0 and Section 6.0 of this EA/HCP.

7.3 ALL OTHER AMENDMENTS

All other amendments will be considered an amendment to the Section 10(a)(1)(B) permit, subject to any other procedural requirements of federal law or regulation that may be applicable to the amendment of such a permit.

8.0 DURATION

This HCP is written in anticipation of issuance of a 10(a)(1)(B) permit for a period of 30 years, during construction, operation, and occupation of Greenshores Residential with associated roads, utilities, dwellings, and relocated buildings and facilities on 21.7 acres of the total 78 acres in Travis County, Texas.

9.0 PUBLIC AND AGENCY COORDINATION

The Applicants have been actively pursuing public and agency acceptance of the development on the Greenshores Residential property for approximately one year. The following agencies, organizations, and individuals were consulted or coordinated with during the process of addressing endangered species concerns for the Greenshores Residential considerations:

Horizon Environmental Services, Inc. - Austin, Texas

Texas Historical Commission

U. S. Fish and Wildlife Service - Austin, Texas, and Albuquerque, New Mexico

This document was prepared by U. S. Fish and Wildlife Service, Austin, Texas, based on all species and habitat information gathered, analyzed, and incorporated herein. Public notification of the availability of the Draft EA/HCP will be published in the Federal Register for 60 days. All concerned agencies, entities, and individuals who make written request will be provided a copy of this EA/HCP for review and comment.

10.0 REFERENCES AND CITATIONS

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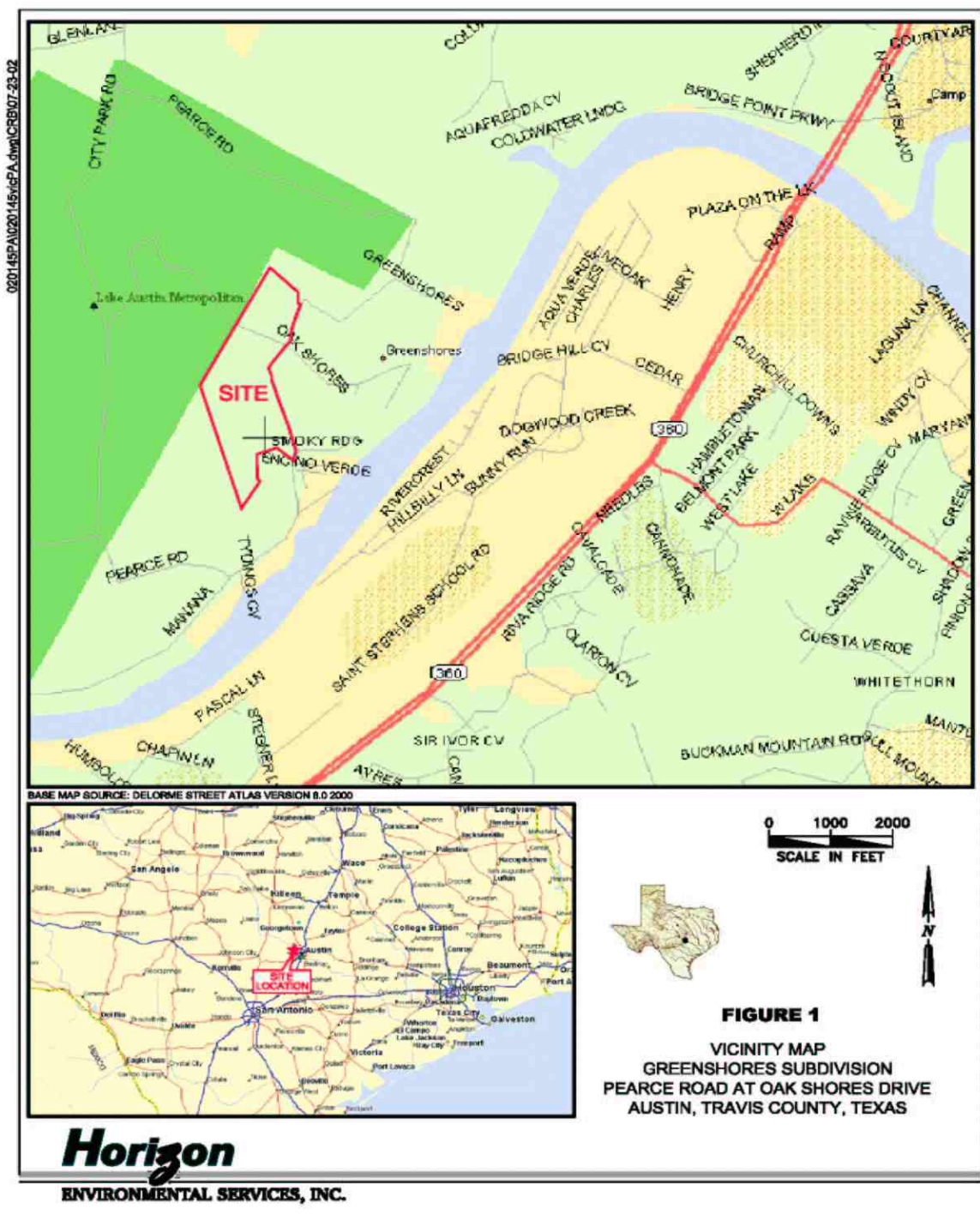
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BASE MAP SOURCE: AUSTIN WEST, TEXAS USGS 7.5' QUAD TRAVIS COUNTY NATURAL RESOURCES PROGRAM, BALCONES CANYONLANDS PRESERVE

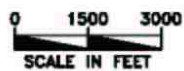


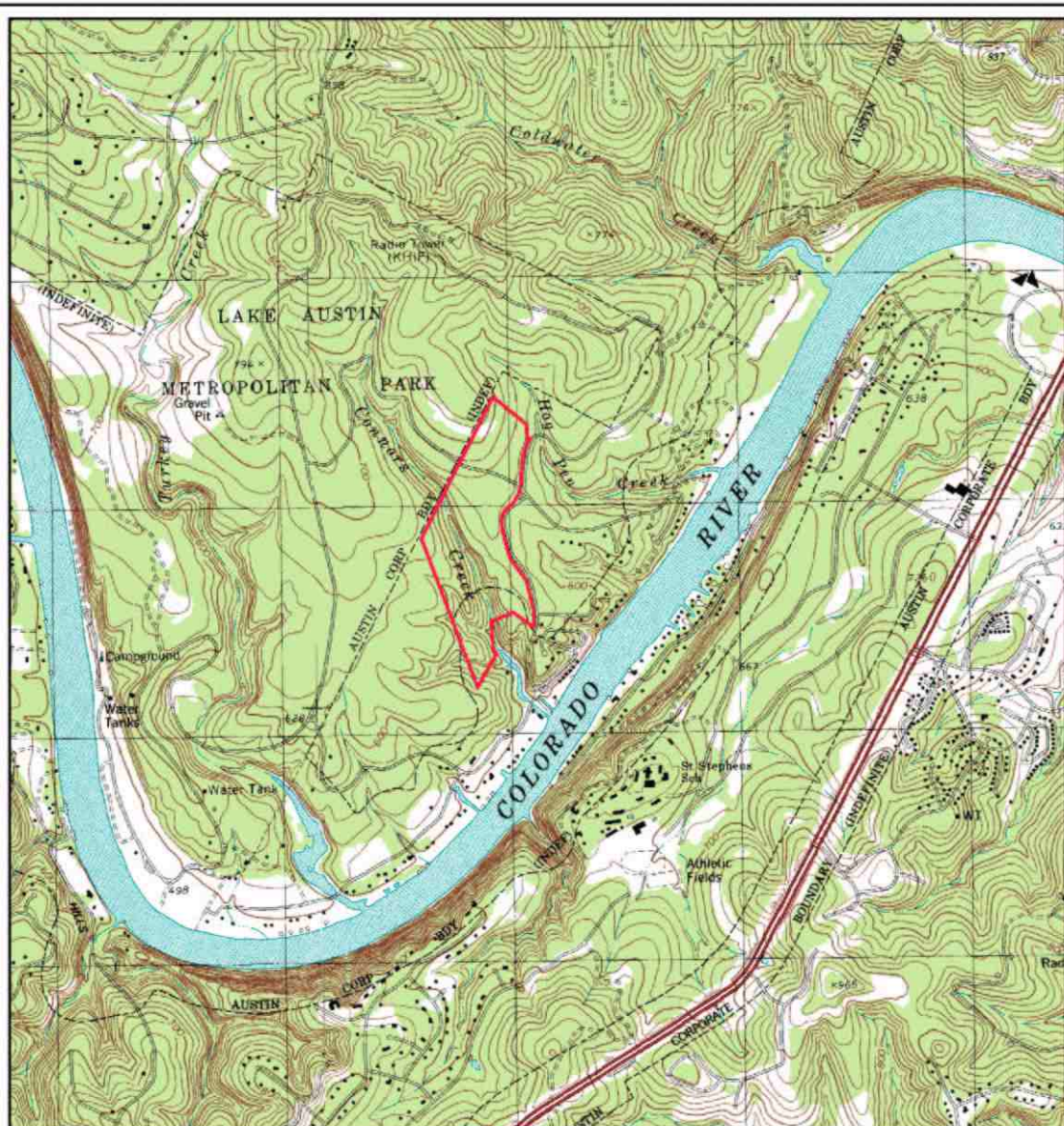
FIGURE 3

**BALCONES CANYONLANDS PRESERVE MAP
GREENSHORES SUBDIVISION
PEARCE ROAD AT OAK SHORES DRIVE
AUSTIN, TRAVIS COUNTY, TEXAS**

Horizon

ENVIRONMENTAL SERVICES, INC.

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BASE MAP SOURCE: GIS/DEPOT AUSTIN WEST, TEXAS QUAD 1808

0 1000 2000
SCALE IN FEET



FIGURE 2

TOPOGRAPHIC MAP
GREENSHORES SUBDIVISION
PEARCE ROAD AT OAK SHORES DRIVE
AUSTIN, TRAVIS COUNTY, TEXAS

Horizon

ENVIRONMENTAL SERVICES, INC.

BASE MAP SOURCE: U.S. GEOLOGICAL SURVEY, 7.5' SERIES,
AUSTIN WEST QUADRANGLE, 1989.

LEGEND

- GCW Sightings on 4/27
- ▲ GCW Sightings on 5/1
- GCW Sightings on 5/5
- + GCW Sightings on 5/11
- ★ GCW Sightings on 5/15



FIGURE 4

1998 GCW SURVEY RESULTS
GREENSHORES SUBDIVISION
PEARCE ROAD AT OAK SHORES DRIVE
AUSTIN, TRAVIS CO., TEXAS

Horizon

ENVIRONMENTAL SERVICES, INC.

